Research Digest

Does regular exercise during pregnancy affect the physical growth or mental development of infants?

Clapp JF 3rd, Simonian S, Lopez B, Appleby-Wineberg S, Harcar-Sevcik R. The one-year morphometric and neurodevelopmental outcome of the offspring of women who continued to exercise regularly throughout pregnancy. *Am J Obstet Gynecol* 1998; 178:594-599.

QUESTION: What is the effect of regular, sustained, antigravitational exercise during pregnancy on the postnatal growth and neurodevelopment of infants?

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Design

Cohort study with follow-up at 1 year.

Setting

USA.

Participants

A total of 104 infants of women recruited from an ongoing study of exercise during pregnancy returned for follow-up and had a satisfactory evaluation at 1 year. All mothers had had uncomplicated pregnancies. All mothers were white, 25-38 years old, had family incomes in the upper 50%, had a median of 17 years of education, and most (91%) worked outside of the home. They all had well balanced diets, had 12-28% body fat, and had no chronic illnesses; they did not use tobacco or drugs. Median parity was two. Exclusion criteria were an abnormal antenatal course (premature labor, pregnancy-induced hypertension, abruptio placentae, or intrauterine growth retardation); intrapartum complications (for example, sepsis, fetal distress, or Apgar score <7); and diseases in infancy that could directly affect development (recurrent otitis media with effusion, feeding problems, surgery, or severe or protracted illness).

Assessment of risk factors

Fifty-two mothers were classified as exercisers (they ran, did aerobics, or used stair climbing machines >3 times/week for >20 min at an intensity >55% of their maximal performance during pregnancy), and 52 were classified as physically active (they participated in intermittent activity such as golf, tennis, or hiking; infrequent activity; or no recreational exercise).

Main outcome measures

Within 24 hours of birth, a trained examiner measured the infant's weight; length; head, chest, and abdominal circumference; triceps and subscapular skinfold thickness; and fat mass. Within 1 month of the child's first birthday an examiner who was unaware of the mother's exercise status administered the original Bayley Scales of Infant Development (psychomotor and mental scales), and a different examiner repeated the morphometric measurements.

Main results

At birth, the infants of mothers who had continued exercising during pregnancy had lower birth weights and less body fat (both P=0.05) than infants of mothers who were physically active, but they did not differ in length, head circumference, or lean body mass. At 1 year, the groups did not differ on any of the morphometric assessments or on performance measured by the Bayley mental scale. Infants of women who exercised performed slightly better on the Bayley psychomotor scale (P=0.05).

Conclusion

Regular, sustained, antigravitational exercise during pregnancy did not affect infants' physical growth or mental development at 1 year.

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COMMENTARY

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Research suggests that regular aerobic exercise during pregnancy improves physical fitness, although a systematic review of the available trials found insufficient data to identify important risks or benefits to the mother or infant.[1]

This study by Clapp et al followed a cohort of 104 physically fit women who became pregnant. The women were divided into two groups: those who continued to exercise regularly during pregnancy and those who were physically active but exercised intermittently. It might have been useful to have included a group of women who did not exercise at all.

The lack of confounding variables means that the study is clear, but this makes the findings less generalizable to other groups of pregnant women. Although the findings showed a statistically significant difference in body fat at birth and in the psychometric scores of infants at 1 year, these findings are not clinically significant. No consideration was given to the parity of the women, which may have had an effect on the birth weight of the infants. The authors rightly point out the limitations of a small, non-representative cohort and are aware of the limitations of the Bayley Scales of Infant Development. All intelligence tests have different strengths and limitations and these should be considered carefully before use.

Women who exercise regularly before becoming pregnant may seek advice from nurses and other health professionals on whether to continue exercising during pregnancy. This study will allow clinicians to reassure active women who meet the selection criteria that they can safely continue to be moderately active during pregnancy without harm to the fetus. Large, randomized controlled trials are needed to adequately assess the potential effects of exercise during pregnancy for women and their babies.

[1] Kramer MS. Regular aerobic exercise during pregnancy. In: Cochrane Collaboration, latest version 29 April 1996. Cochrane Library. Oxford: Update Software, 1996.